

LISTING OF THE CLAIMS (1-48)

Claims 1-28 (cancelled)

Claim 29 (currently amended): A process for providing shallow trench isolation in the surface of a silicon semiconductor substrate comprising:

forming a trench in the surface of the substrate;

holding the temperature of said substrate at a first temperature in a first gaseous environment for a first period of time to grow a liner oxide on a surface of said trench;

increasing the temperature of said substrate from said first temperature to a second temperature in a second gaseous environment for a second period of time in order to anneal the liner oxide;

monotonically decreasing the temperature of said substrate from said second temperature to a third temperature, and filling said trench with a chemical vapor deposition (CVD) oxide at said third temperature.

Claim 30 (previously presented): The process of Claim 29, wherein said first temperature is about 1000 degrees centigrade.

Claim 31 (previously presented): The process of Claim 29, wherein said first gaseous environment comprises oxygen and chlorine.

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Claim 32 (previously presented): The process of Claim 29, wherein said second temperature is equal to about 1050 degrees centigrade.

Claim 33 (previously presented): The process of Claim 29, wherein said second gaseous environment comprises nitrogen.

Claim 34 (previously presented): The process of Claim 29, wherein said second period of time is equal to about three hours.

Claim 35 (previously presented): The process of Claim 29, wherein said third temperature equals about 800 degrees centigrade.

Claim 36 (previously presented): A process for providing shallow trench isolation on the surface of a silicon semiconductor substrate comprising:

forming a trench on the surface of the substrate;

heating said substrate to a first temperature in a first gaseous environment for a first period of time;

increasing the temperature of said substrate to a second temperature;

holding the temperature of said substrate at said second temperature for a second period of time in a second gaseous atmosphere;

holding the temperature of said substrate at said second temperature in a third gaseous environment for a third period of time to grow a liner oxide on a surface of said trench;

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increasing the temperature of said substrate from said second temperature to a third temperature in a fourth gaseous environment for a fourth period of time in order to anneal the liner oxide;

decreasing the temperature of said substrate from said third temperature to a fourth temperature, and filling said trench with a CVD oxide at said fourth temperature.

Claim 37 (previously presented): The process of Claim 36, wherein said first temperature is about 800 degrees centigrade.

Claim 38 (previously presented): The process of Claim 36, wherein said first gaseous environment comprises argon and oxygen.

Claim 39 (previously presented): The process of Claim 36, wherein said second temperature is equal to about 1000 degrees centigrade.

Claim 40 (previously presented): The process of Claim 36, wherein said second gaseous environment comprises argon.

Claim 41 (previously presented): The process of Claim 36, wherein said third gaseous environment comprises oxygen and chlorine.

Claim 42 (previously presented): The process of Claim 36, wherein said third temperature is equal to about 1050 degrees centigrade.

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Claim 43 (previously presented): The process of Claim 36, wherein said fourth gaseous environment comprises nitrogen.

Claim 44 (previously presented): The process of Claim 36, wherein said fourth period of time is equal to about three hours.

Claim 45 (previously presented): The process of Claim 36, wherein said fourth temperature equals 800 degrees centigrade.

Claim 46 (previously presented): A process for providing shallow trench isolation on the surface of a silicon semiconductor substrate comprising:
forming a trench on the surface of the substrate;
stabilizing the substrate at about 1000 degrees centigrade for a first period of time;
growing a liner oxide on a surface of said trench at about 1000 degrees centigrade;
annealing said liner oxide at about 1050 degrees centigrade; and
cooling directly to a deposition temperature and filling said trench with a chemical vapor deposition (CVD) oxide.

Claim 47 (previously presented): The process of Claim 46, wherein said deposition temperature is about 800 degrees centigrade.

Claim 48 (previously presented): The process of Claim 46, wherein said liner oxide is grown in the presence of chlorine and oxygen.

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